UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/766,715	01/28/2004	Raja Shekar C. S.	1363-013	3840

7590 07/17/2007

Michael T. Sanderson, Esq.
King & Schickili, PLLC
247 North Broadway
Lexington, KY 40507

EXAMINER	
LEE, BETTY E	

ART UNIT	PAPER NUMBER
2616	

MAIL DATE	DELIVERY MODE
07/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/766,715	C. S., RAJA SHEKAR	
	Examiner	Art Unit	
	Betty Lee	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims **21 and 22** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 21 and 22 are directed to data structures stored on a computer readable medium. The data structures as claimed in claims 21 and 22 are not statutory since no requisite functionality is present to satisfy the practical application requirement. The data structures do not cause a functional change in the computer.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims **1-3, 5-9, 11, and 17-22** are rejected under 35 U.S.C. 102(e) as being anticipated by Gaspard et al. (US 2003/0112764).

Regarding claim 1, Gaspard teaches obtaining the configuration of all routers in the network (see paragraph 52 lines 3-6);

for a particular router, identifying an unnumbered interface (see paragraph 53 lines 1-6);

for the unnumbered interface of a particular router, identifying connected routers on the destination networks reachable through the unnumbered interface and adding those connected routers to a connected router list for the unnumbered interface (see paragraph 54 lines 1-5 and paragraph 56 lines 21-22);

for the connected routers in the connected router list, determining which of the connected routers is an immediate neighbor to the particular router having the unnumbered interface (see paragraph 54 lines 1-8);

determining the connected interface of the immediate neighbor which connects to the unnumbered interface of the particular router (see paragraph 54 lines 8-14); and

identifying an unnumbered link between the unnumbered interface and the connected interface (see paragraph 56 lines 1-15).

Regarding claim 2, Gaspard further teaches checking if the connected router is between the particular router and another router in the connected router list (see paragraph 56 lines 1-7).

Regarding claim 3, Gaspard further teaches the checking operation is conducted by determining whether the connected router connects to the unnumbered interface and to all other connected routers over different interfaces (see paragraph 56 lines 1-15).

Regarding claim 5, Gaspard further teaches confirming that the immediate neighbor connects to the unnumbered interface via a network route or a default route over an unnumbered interface (see paragraph 56 lines 1-15).

Regarding claim 6, Gaspard further teaches storing the unnumbered link in a connectivity list (see paragraph 56 lines 1-15); and periodically updating the connectivity list (see paragraph 56 lines 18-22).

Regarding claim 7, Gaspard further teaches that the connectivity list is periodically updated by repeating the operations and determining whether the unnumbered link was identified in the current or a previous cycle (see paragraph 56 lines 1-15).

Regarding claim 8, Gaspard teaches for a routing device in a network, identifying an unnumbered interface of the routing device (see paragraph 53 lines 1-6);

identifying connected routing devices connected to the unnumbered interface (see paragraph 54 lines 1-5);

determining which of the connected routing devices is an immediate neighbor to the routing device having the unnumbered interface (see paragraph 54 lines 1-8);

identifying an unnumbered link between the unnumbered interface and the corresponding interface of the immediate neighbor (see paragraph 56 lines 1-15); and

indicating the unnumbered link in network topology data (see paragraph 51 lines 10-19).

Regarding claim 9, Gaspard further teaches the operation of determining the immediate neighbor is conducted by determining which connected routing device

connects to the unnumbered interface and to all other connected routing devices over different interfaces (see paragraph 56 lines 1-15).

Regarding claim 11, Gaspard further teaches confirming that the immediate neighbor connects to the unnumbered interface via a network route or a default route (see paragraph 56 lines 1-15).

Regarding claim 17, Gaspard teaches at least two network devices connect to one another, one device having an unnumbered interface connected to an unnumbered interface of the other device thereby defining a link that is unnumbered (see paragraph 53 lines 1-10); network management information data indicating the interface assignments of the two network devices (see paragraph 53 lines 1-10); and a network management system configured to access the network management information data, to confirm that the network devices are immediate neighbors and connect to one another via unnumbered interfaces (see paragraph 53 lines 1-10), to assign an identifier of the unnumbered link (see paragraph 53 lines 1-10), and to present that identifier in network topology data (see paragraph 55 lines 5-8).

Regarding claim 18, Gaspard further teaches three or more network devices, wherein the network management system is configured to determine the connection of the unnumbered interfaces by comparing the interface connections of the network devices (see paragraph 56 lines 1-15).

Regarding claim 19, Gaspard further teaches routing devices and the network management system is configured to identify all routing devices connected to each unnumbered interface of a routing device (see paragraph 54 lines 1-14).

Regarding claim 20, Gaspard further teaches the routing devices comprise routers (see Fig. 5 Boxes 510 and 520).

Regarding claim 21, Gaspard teaches an interface data structure representing an interface of a first routing device (see paragraph 51 lines 10-19); a connected router data structure identifying other routing devices reachable over an interface of the first routing device (see paragraph 51 lines 10-19); and an unnumbered connectivity data structure identifying an unnumbered link between an interface of the first routing device and an interface of another routing device identified in the connected router data structure (see paragraph 53 lines 1-10).

Regarding claim 22, Gaspard further teaches a connectivity node data structure identifying a list of unnumbered links (see paragraph 53 lines 1-10); and a router data structure identifying information regarding the first routing device (see paragraph 53 lines 1-10).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims **4, 10, and 12-16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaspard et al. (US 2003/0112764) in view of Kracht (US 6,516,345).

Regarding claim 4, Gaspard teaches all the subject matter of the claimed invention with the exception of the route table. However, Kracht teaches the checking operation utilizes values in a route table for each connected router, wherein the values comprise the interface index and the route destination (see col. 13 lines 5-11). Thus, it would have been obvious to one of ordinary skill in the art to use the system of system of Kracht in the system of Gaspard. The motivation for doing so is to make the system more flexible by being able to determine unnumbered links without having to create and update a link list.

Regarding claim 10, Gaspard teaches all the subject matter of the claimed invention with the exception of the route table. However, Kracht teaches the determining operation utilizes values in a route table for each connected router, the values comprising the interface index and route destination (see col. 13 lines 5-11). Thus, it would have been obvious to one of ordinary skill in the art to use the system of system of Kracht in the system of Gaspard. The motivation for doing so is to make the

system more flexible by being able to determine unnumbered links without having to create and update a link list.

Regarding claim 12, Gaspard teaches identifying an unnumbered interface of a routing device in a network (see paragraph 53 lines 1-6). Gaspard teaches all the subject matter of the claimed invention with the exception of using a routing table to discover links.

However, Kracht teaches using route data to identify connected routing devices connected to an interface (see col. 11 lines 53-63);

for every connected routing device, comparing the interface connections of the connected routing device (see col. 13 lines 5-11); and

using the comparisons to identify an link between the interface and a corresponding interface of one of the connected routing devices (see col. 13 lines 5-11). An unnumbered interface is similar to an unknown device in that the system cannot determine the links connected to it. Kracht teaches comparing links to determine the unknown device, which can be similarly used to determine and unknown/unnumbered interface connection. Thus, it would have been obvious to one of ordinary skill in the art to use the system of system of Kracht in the system of Gaspard. The motivation for doing so is to make the system more flexible by being able to determine unnumbered links without having to create a link table.

Regarding claim 13, Gaspard teaches all the subject matter of the claimed invention with the exception of the comparison. However, Kracht teaches the comparison utilizes route destination and corresponding interface data (see col. 13 lines

5-11). Thus, it would have been obvious to one of ordinary skill in the art to use the system of system of Kracht in the system of Gaspard. The motivation for doing so is to make the system more flexible by being able to determine unnumbered links without having to create and update a link list.

Regarding claim 14, Gaspard teaches identifying an unnumbered interface of a routing device in a network (see paragraph 53 lines 1-6); determining the immediate neighbor to the unnumbered interface using IP links list (see paragraph 54 lines 8-14); and identifying an unnumbered link between the unnumbered interface and a corresponding interface of the immediate neighbor (see paragraph 56 lines 1-15). Gaspard teaches all the subject matter of the claimed invention with the exception of using route table data.

However, Kracht teaches using route table data to determine neighbors (see col. 11 lines 53-63). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Kracht in the system of Gaspard. The motivation for doing so is to make the system more flexible by being able to determine unnumbered links without having to create and update a link list.

Regarding claim 15, Gaspard teaches all the subject matter of the claimed invention with the exception of using route table data. However, Kracht teaches using route table data to confirm that the immediate neighbor has a network route or a default route to the interface over the corresponding interface (see col. 11 lines 53-63). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Kracht in the system of Gaspard. The motivation for doing so is to make the system more flexible

by being able to determine unnumbered links without having to create and update a link list.

Regarding claim 16, Gaspard further teaches storing the unnumbered link in a topology database indicative of the network topology (see paragraph 51 lines 10-19); and repeating the method in periodic cycles such that changes in topology are detected and identified (see paragraph 52 lines 1-6).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Goringe et al. (US 2003/0043820) and Pelavin et al. (US 2005/0102423) are all cited to show systems which are considered pertinent to the claimed invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betty Lee whose telephone number is (571) 270-1412. The examiner can normally be reached on Monday-Thursday 9-5 EST and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BL

7/13/07

HASSAN KIZOU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600